

BUILDING A WORLD OF DIFFERENCE

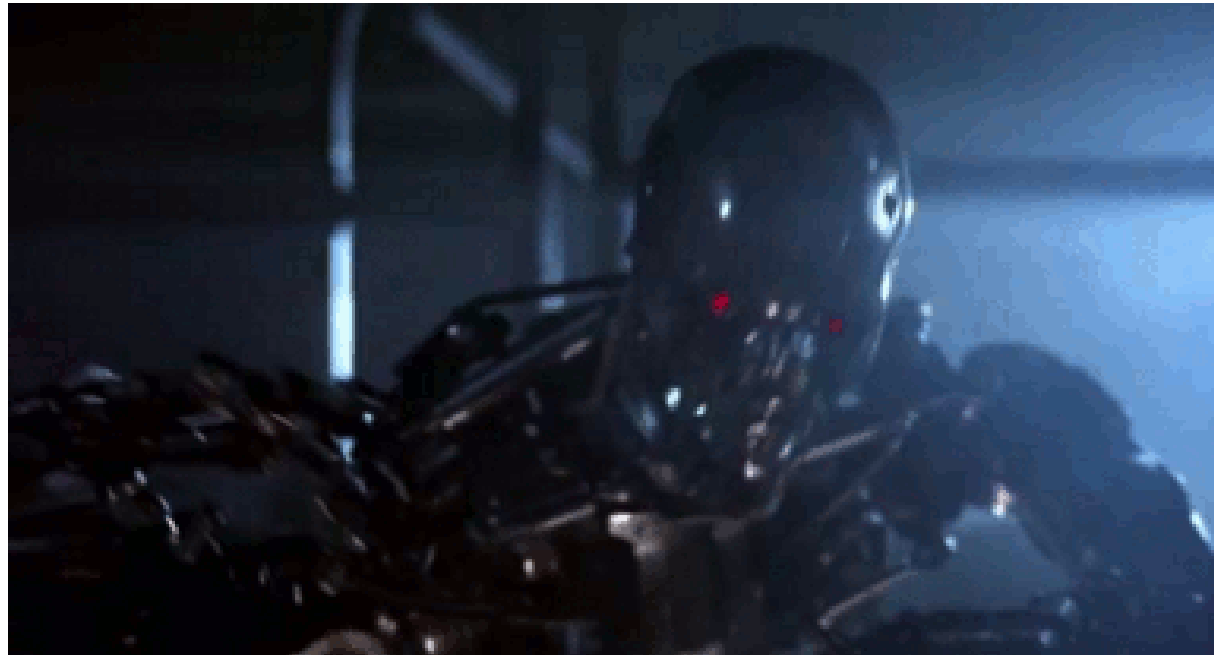
Internet of Things (IoT) - Primer

CIBO: September 2017 Technical Committee Meeting

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WHAT IS IoT?



...and what it is not.

IoT and Smart Integrated Infrastructure

Definition according to the IoT Global Standards Initiative:

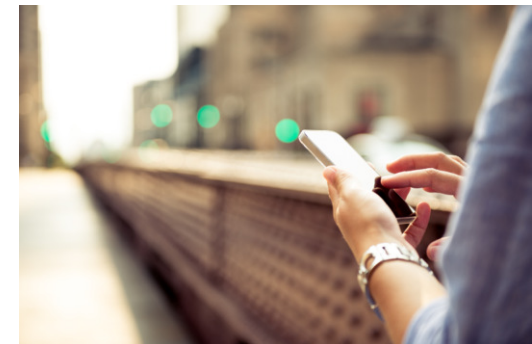
The Internet of Things (IoT) has been defined as a *“global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies”*.

- IoT enables Smart Integrated Infrastructure (SII)
 - The convergence of physical infrastructure, communications, data analytics and social systems—to transform industry and communities



BEING “**SMART**” IS UNDERSTANDING HOW TO PLAN, INTEGRATE AND OPERATE TECHNOLOGIES HOLISTICALLY

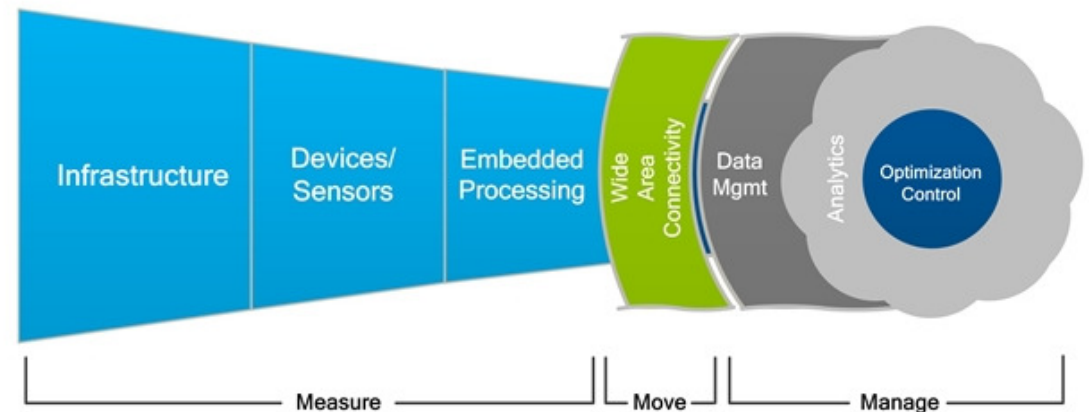
- **Smart:** Leveraging data from sensors, networks, etc. to improve system performance
- **Integrated:** Systems working together to produce value that could not be achieved independently
- **Infrastructure:** Physical assets or systems that play a central role in the “smart community”



SMART INTEGRATED INFRASTRUCTURE APPLICATION FRAMEWORK

- **Infrastructure** – the “thing(s)” being measured and controlled.
- **Devices & sensors** – providing data collection and control
- **Embedded processing** – edge processing to ensure optimized transport of data or localized analytics.
- **“Wide Area” connectivity** – wired and/or wireless communication capability allowing data to be transmitted.

- **Data Storage** – all raw and processed data.
- **Analytics** –trending, data analysis and prediction to enable new and value-added services.
- **Optimization and Control** – closed loop control of infrastructure providing alerts and actions.



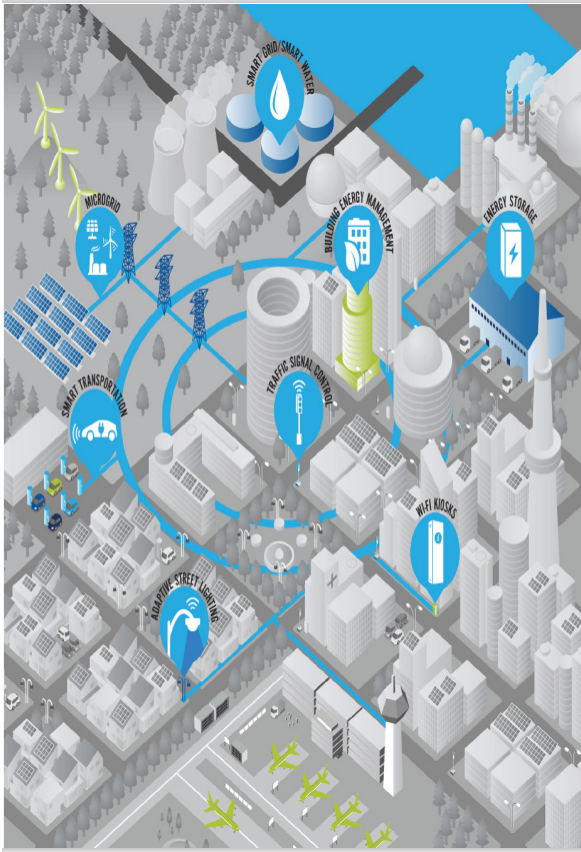
Key Issues Driving the Need for Industrial IoT or Smart Manufacturing



- Aging Infrastructure
- Aging/Retiring Workforce
- Operational efficiency
- Sustainability and Regulatory Compliance
- Tight Operating Margins and New Business Models
- Volatile Markets and Supply Chains
- New Technologies and Data Streams
- Energy Management and Distributed Energy Infrastructure

Diverse Objectives & Constraints Must Be Managed in a Complex, Dynamic Environment

Opportunities and Challenges with Industrial IoT



- **Opportunities**

- Asset and products tracking
- Control room consolidation
- Advanced monitoring and diagnostics
- Autonomous robots
- Augmented reality

- **Challenges**

- Cyber security
- Return on investment
- Integrating new technologies with old equipment
- Social optics – job losses

IoT Example: Advanced Monitoring & Diagnostics

Improving Performance And Operational Health While Reducing Business Risk



A Proven Means for Early Identification of Issues and saving maintenance costs

Advanced Monitoring & Diagnostics

FEATURES

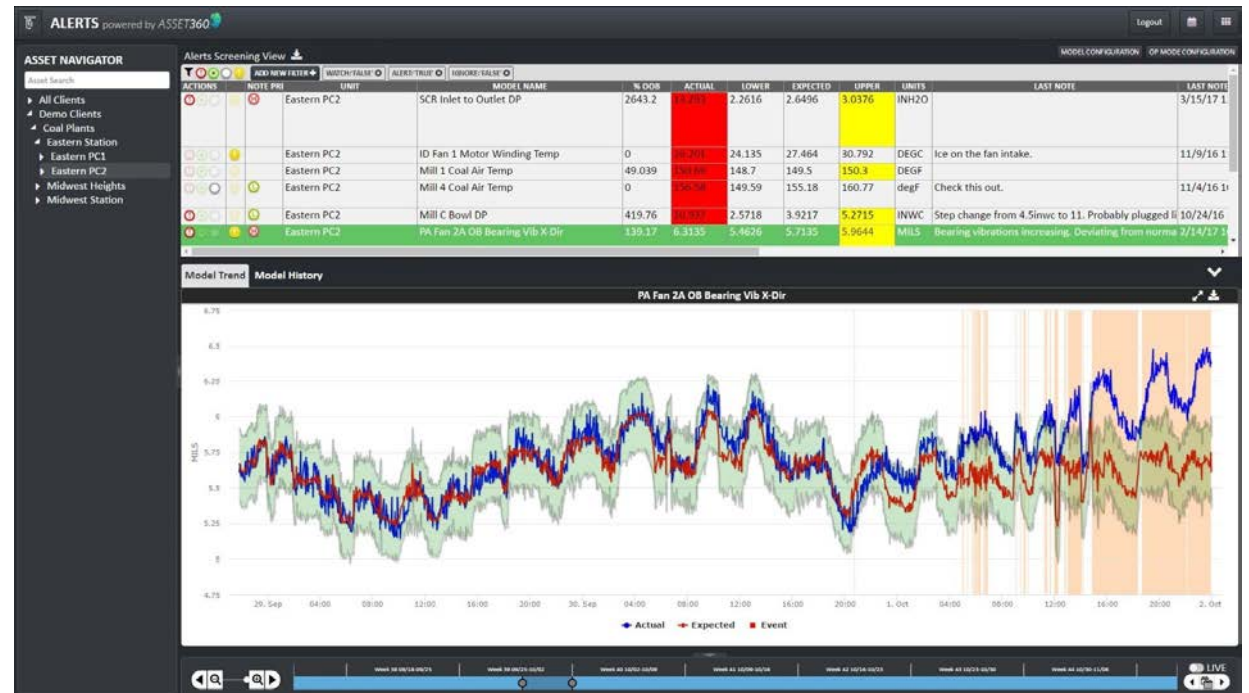
- Machine Learning
- 24-hour monitoring
- Issue documentation and workflow

BENEFITS

- Prevent equipment failures and forced outages
- Detect and resolve inefficiencies

PROOFS

- 100+ units monitored
- Documented ROI ranging from 3:1 to 12:1



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Discussions

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